WEBLOG

Wermuth's
Investment Outlook

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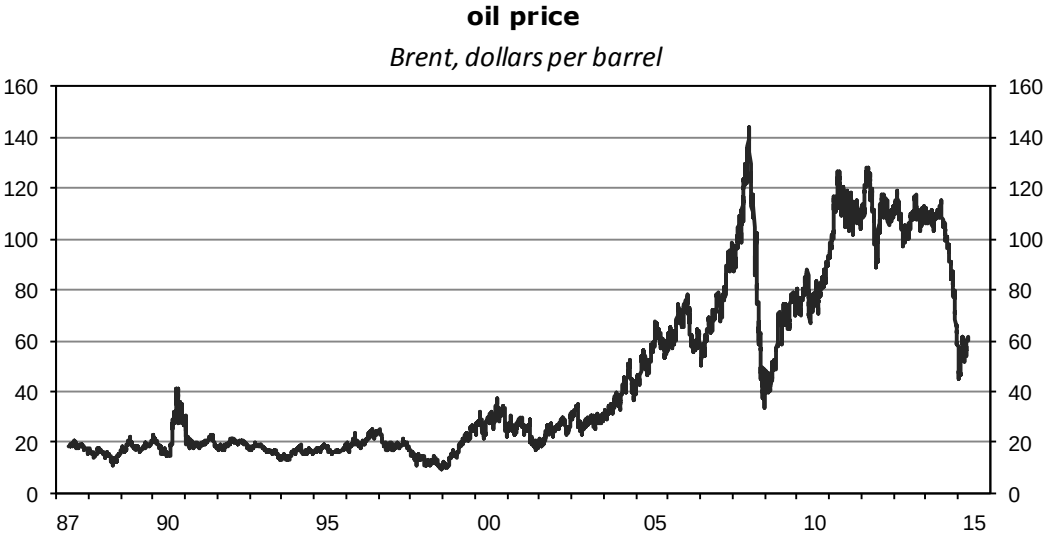
What if oil prices stay low forever?

by Dieter Wermuth*

1. The forecast that oil will remain cheap rests on the assumptions of weak demand growth and the absence of supply constraints. Given the economic – and political - importance of this commodity the effects on the global economy will be significant - if the forecast turns out to be correct. **There will be winners and losers, and structural changes will gain momentum as people realize that the fall from about 100 dollars in mid-2014 to 60 dollars this spring is not just a soon-to-be-reversed blip but something more durable.**



source: Thomson Reuters

2. **As I will show below, we can expect the following:**

   - the exploration and production of "marginal oil" will be reduced
   - the demand for fossil fuels goes up
   - prices of oil substitutes such as natural gas, coal or biomass will fall to permanently lower levels
   - the income of oil (and, more generally, energy) producers and exporters declines while that of consumers and firms in oil importing countries increases

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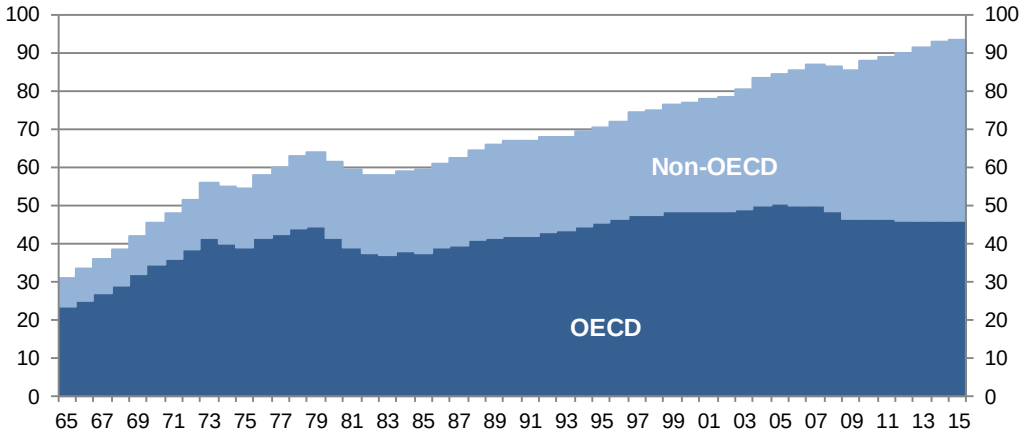
- a temporary deflationary effect
- the carbon bubble pops – it had been created by the expectation of permanently high oil prices; multi-trillion euro write-downs on surplus capacities and reserves in the energy sector have become necessary
- the relative market value of oil companies falls while that of car and airplane manufacturers rises
- for the environment and climate policies low prices for fossil fuels is bad news
- it becomes less attractive to invest in green technologies or public transportation – improving energy efficiency is not so urgent any longer

3. For an economist, these results follow directly from a standard analysis: **what happens if the relative price of an important commodity changes both significantly and permanently?** It is the kind of approach I would use if the euro exchange rate had depreciated to a new and depressed equilibrium level, or to analyze the effects of a stock market crash. **The only problem I have would be if the oil price climbed quickly back to $100 and more; the analysis would then be rather pointless.**

4. **I am fairly sure, though, that this will not happen**: (1) high oil prices had stimulated the creation of new production capacities many of which are now idle but could be re-activated if prices rise again; (2) oil inventories are huge as production has outpaced consumption since the beginning of 2014, (3) for the sake of defending its market share against newcomers the OPEC cartel does not intend to cut back on output, (4) new production technologies have boosted recovery rates at difficult deposits which has created a whole new source of supply, (5) energy efficiency continues to improve, and (6) global GDP growth has slowed, perhaps for good. At the same time, many governments are pushed by voters to do something against pollution; one effect is (7) the gradually increasing role of energy production from sun and wind, ie, the substitution of fossil fuels by alternative sources of energy.

global oil consumption*)

mil. bbl/day



*) 2015 IEA projection as of March 2015

sources: BP Statistical Review of World Energy , IEA

5. **To be sure, the lower the oil price falls, the stronger will become the forces that push it up again – demand will increase, supply will decrease.** The actual market price is always a mix of developments on the demand and supply sides, and the further it has been pushed in either direction by euphoric or pessimistic market participants, the more violent will be the following correction.

Oil production continues to increase

6. So far, global oil production has expanded year after year, almost irrespective of the ups and downs of the world economy. It has not been a problem to accommodate the steadily rising demand for the commodity. **Capacities have responded to earlier price signals in a predictable way and are now considerably larger than actual demand**. As oil prices have come down over the past year, output growth may have slowed - but continues. This suggests that the marginal cost of traditional oil production is still lower than the market price which in turn means that it is neither unreasonably high nor low.

7. But it is no longer profitable to extract **oil from tar sands, shale, the arctic and deep sea deposits when oil prices are as low as today. Marginal costs are too high.** Most of these developments had been based on the expectation that prices would inevitably go up in the long term from the 100-dollar levels registered before the summer of 2014, or at least stay there. Reserves are limited, aren't they? The idea that there is something like "peak oil" and a natural tendency for ever rising prices has turned out to be a fallacy, a fallacy which has led to a massive misallocation of the world's spending on capital goods. If oil prices remain permanently in the 40 to 70 dollar range, the most recent and usually the most expensive production facilities will be shut down. While this reduces global oil supply, lower-cost facilities can so far fill the gap. The upward pressure on the oil price is moderate at best.

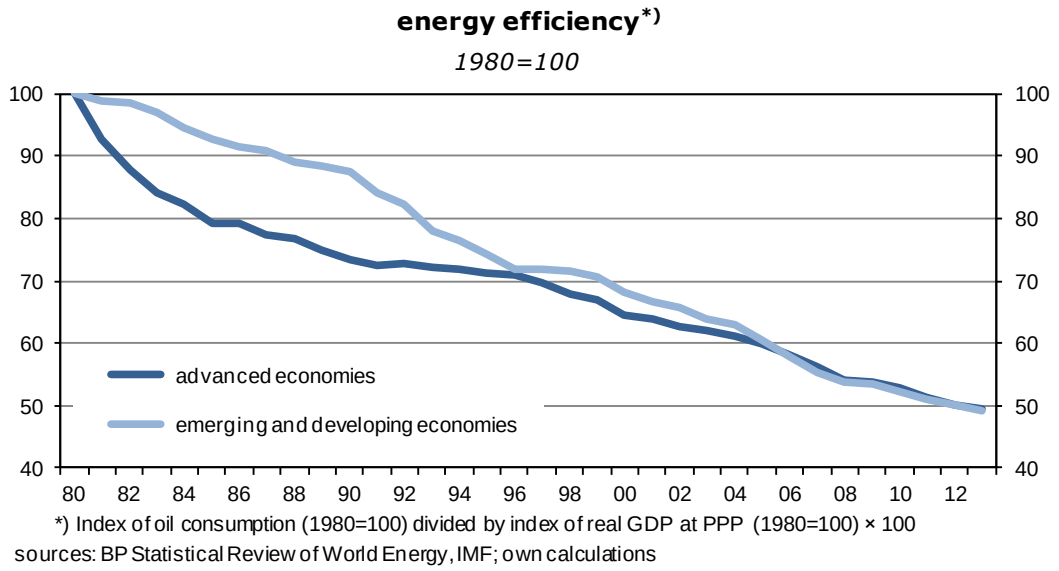
Low oil prices boost demand

8. By not cutting oil supplies when prices were on the way down, the **OPEC cartel has de facto rendered unprofitable many of the production capacities in other parts of the world** and increased its market share again. Oil importers are therefore once more exposed to political events in the Arabian Gulf and North Africa. Over time, OPEC can be expected to use its new leverage to raise prices. The need to develop alternative sources of energy will therefore not go away.

9. While advanced, ie, rich economies have arrived at a point where, for various reasons, they have begun to cut back on oil consumption, emerging and developing countries are still in an expansionary mode. **For the next decade or two, their demand for fossil fuels is bound to increase further.**

10. The International Monetary Fund (IMF) has just reported that this part of the world now accounts for 56.9 percent of global GDP at purchasing power parities (PPP), and for no less than 85.3 percent of the world's population (World Economic Outlook, April 2015, p. 149). These countries are in a dynamic catching-up process in terms of industrialization, motorization, infrastructure and housing investments, tourism, and so on, all of them boosting the demand for energy, and oil in particular. In the same publication, the IMF predicts that the real GDP of these countries will grow by an average annual rate of no less

than 5 percent in the years through 2020, compared to a rate of just 2 percent for advanced countries. In aggregate, global demand for oil and other fossil fuels continues to rise.



*) Index of oil consumption (1980=100) divided by index of real GDP at PPP (1980=100) × 100
sources: BP Statistical Review of World Energy, IMF; own calculations

11. The demand for oil rises not only because the world economy keeps expanding but also because low oil prices themselves are a stimulant. In the US, for example, **auto sales have been up sharply since last summer, of SUVs in particular**, as the cost of driving has fallen. All across the world, motor bikes and cars have become more affordable, and auto stocks have done quite well as a result.

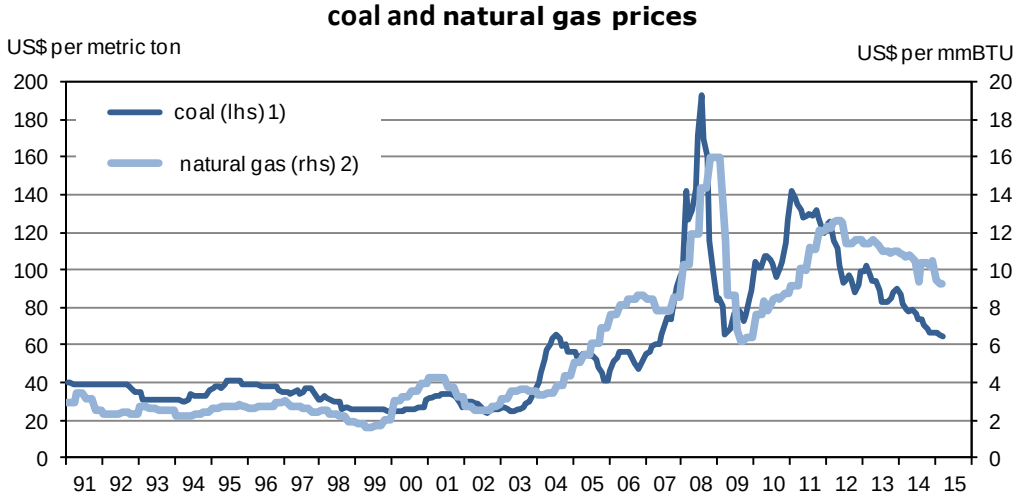
The big unknown: the equilibrium oil price

12. Ironically, assuming that oil prices will stay low implies that underlying forces on both the supply and demand sides will push them up or prevent them from falling more. In economics there is no simple rule to determine empirically where the new equilibrium oil price might be. Multiple equilibria are not only possible on stock markets, in foreign exchange, or the market for rare paintings but also for a commodity such as oil. **A stable range in which the price fluctuates for an extended time can come about almost by accident, and no one can say why it settled there and not somewhere else.** As long as the new price range can somehow be justified in terms of fundamentals and market dynamics, it will be regarded as reasonable and durable – and be used as a basis for capital spending decisions.

13. In the past 40 years, prices have moved between 10 and 150 dollars per barrel. Looking at the first graph, for 15 years it had appeared that 20 dollars was a sort of natural price level, while the three and a half years when prices were around 100 look like an outlier. All I can say is that **a price range of 40 to 70 is more plausible than one between 90 and 120**.

14. **Oil has substitutes**. So when it gets cheaper, people find buying gas or coal less attractive, buy less and thus drive down the prices of these commodities as well. One effect is that the value of reserves in the ground falls which in turn has a negative impact on the market value of the companies that own these reserves. Revenues of these firms will also shrink, and so

will profits. On the other hand, the demand for gas and coal will increase in response to the price decline. Coal and gas-run power plants can produce electricity at lower costs than before – one victim of this is the renewable energy industry whose price competitiveness suffers. On the supply side, expect similar effects as on the oil market: marginal producers have to leave the market. As the next graph shows, the coal prices does not seem to have bottomed out while the gas price remains fairly stable so far – after it had fallen by about one quarter from its end-2013 level.



1) Australian thermal coal FOB Newcastle/Port Kembla - 2) Russian Natural Gas border price in Germany

source: IMF

Massive redistribution of income from producers to consumers

15. **Permanently lower prices of oil and other fossil fuels will massively change the distribution of income and wealth, inside of countries and globally**. Assume a decline of the oil price by 40 dollars: this will reduce the income of the oil producers by 40$ times a daily – today's - production of 93m barrels times 365 days, or roughly $1.36tr a year. Under the assumption that coal and gas producers will also see a significant decline of their output prices, fossil fuel producers as a group will lose annual revenues in the order of $2tr to $2.5tr. The IMF estimates that the world's nominal GDP at actual (not PPP) exchange rates will be $74.6tr in 2015 which means that an income stream of between 2.7 to 3.4% of global GDP is transferred from fossil fuel producers to fossil fuel consumers, and not only in 2015 but forever if the initial assumption of this analysis holds – that the price decline is for good.

16. **What we see here is actually just a reversal of the massive transfer of income from the oil importing to the oil exporting countries that occurred 10 to 15 years ago.** Oil is a dumb product and should therefore be cheap in the long run. Should the oil price decline further, many of the fancy high-rise buildings in the Gulf or in Russia will stay empty, as castles in the sand.

17. **Since the population and the aggregated GDP of the oil importers is several times larger than that of the producing countries, the world's savings rate falls in response to the oil price decline, the spending rate therefore rises, as well as global GDP**. This is a one-time, but significant effect. Not long ago, OPEC countries had savings ratios of 33 to 40 percent –

they didn't quite know what to do with all that money. Households and firms in the oil importing countries do not have such a problem.

18. The **losers in terms of changes in real incomes** are the OPEC countries, Russia, Norway, Australia, South Africa, Mexico and Brazil while China, India, Japan, most of the rest of Asia, the US, and most of Western Europe, Africa and Latin America see their disposable incomes rise. World trade gets a boost and so do exports of countries that specialize on manufactured goods and high value-added services.

19. **Inside oil importing countries, the relative purchasing power shifts** in favor of those households which spend a large portion of their income on driving and heating, ie, in favor of the poorer segments of the population. The effect is comparable to a reduction of an indirect tax like the sales tax or a tax on fuel. Because the prices of energy-intensive products decline, people have money to buy other things. The profits of firms which spend a lot on oil, gas and coal will also get a boost. Overall, **the oil price decline is like a shot in the arm of oil importing economies.**

20. In their spring report, **Germany's economic research institutes have calculated the benefits of a lower oil price**: compared to 2014, a fall of the average oil price to $59 reduces the cost of oil imports by €14.3bn, for processed oil products by €2.4bn, and for gas by €5.2bn, for a total of €22bn, or 0.8% of German GDP. The effects are transmitted via two main channels: rising business profits and a reduction of households' energy bills.

Oil price decline does not permanently reduce consumer price inflation

21. Not to forget, though: in OECD countries which are on the brink of deflation, **a reduction of headline inflation rates caused by cheaper energy could lead to even lower inflation expectations.** Households may decide to postpone their spending plans, betting on lower prices in the future. Economic growth would slow, and long-term interest rates might fall some more. I don't think we should put too much weight on this point – the effects of the one-time reduction of oil and other energy prices on inflation will be out of the system within 12 to 18 months.

22. Yes, it will be cheaper than before to buy the energy-intensive components of the consumer basket, but the inflation rate a year from now will not be affected much. Central banks which keep an eye on core inflation – which excludes seasonal food and energy - do not need to ease policies in response to the decline of headline inflation; they know it is temporary. On the other hand, in today's environment of unused capacities they appreciate that **the demand for local products will be strengthened by the oil price decline (ie, the improvement of the terms of trade). After all, the goal of the ECB or the Fed is to stimulate economic activity**, reduce the output gap and thus make it easier to raise prices. A strong economy has a positive impact on inflation expectations which is what monetary policy is aiming at these days.

A carbon bubble has popped

23. **The transition from a world of expensive to a world of abundant and cheap fossil fuels is potentially disruptive**. Billions of euros have literally been sunk into the exploration and development of oil and gas wells, into drilling equipment, new coal mines and infrastructure such as roads, pipelines and railroads. All investments which made only sense when oil prices were high and rising have to written off once it becomes clear that they will not rise to previous levels again. BofA Merrill Lynch has estimated that for almost a decade these capital expenditures had been in the order of 700 billion dollars a year. A huge capital stock has been built which is now worthless.

24. At the same time, the reserves of the oil, gas and coal producers are also worth much less than before – which additionally reduces the market value of these companies. **A carbon bubble, caused by the high oil prices that prevailed until last summer, is therefore deflating.** The saving grace, compared to the deflation of the real estate bubble in 2008, is the fact that the leverage (borrowing) ratio of fossil fuel companies has been fairly modest. They have mostly been cash rich and are not overly dependent on banks and capital markets. Debt-to-asset ratios are in the order of 8% (ExxonMobile) to 25% (Total) while debt-to-common equity ratios are in a range of 17% (ExxonMobile) to 63% (Total). These are reassuring buffers which shield the firms against large and unexpected losses such as last year's decline of the oil price and the write-offs it triggered.

25. **The big listed oil companies have certainly been under pressure since last summer, but their stock prices have not crashed.** Chevron's has been down about 17%, Exxon Mobile's 16%, Total's 10%, BP's 8% and Shell's 3%. This looks manageable. The question is whether markets have already priced in the possibility that oil will remain cheap from here on – they may still be betting on a price rebound. Hard to tell.

And the winners are …

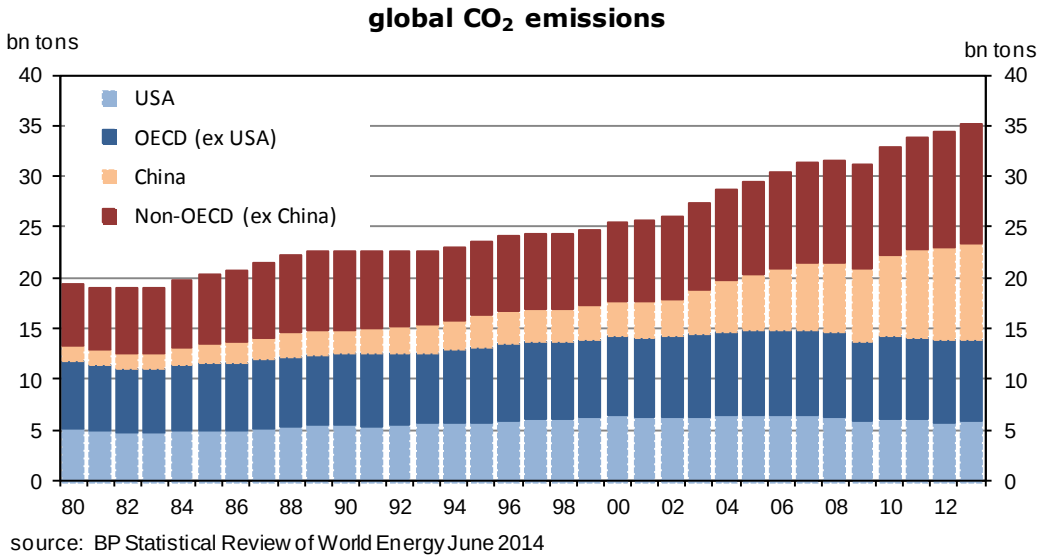
26. **Stocks of companies which sell cars or airplanes, ie, products that burn fossil fuels, have done quite well since the summer of 2014**, as you would expect. Here are some examples: Toyota +45%, Volkswagen +17%, GM +2%, Honda +18%, BMW +22%, Daimler +27%, Airbus +28%, Boeing +15%. Of course, the oil price is just one determinant of these stock prices, but an important one, comparable to exchange rates. Incidentally, Tesla, the producer of electric vehicles, has been down by 8% since June 2014.

27. **Relative valuations of the two groups of listed companies – producers versus consumers of fossil fuels – have probably changed for good if the oil price does indeed stay low.** The former will be traded with a discount in terms of price-to-earnings, price-to-EBITDA, price-to-book or price-to-cash flow ratios while the others get a premium (one effect is that the relative cost of their capital falls.)

Near-term: bad news for the environment

28. **There is a darker side to the price decline of fossil fuels: it reduces the incentive to economize.** Why burn less when oil, gas or coal suddenly cost a third or half as much as last year? If the price mechanism were left to itself, it is a foregone conclusion that the emission

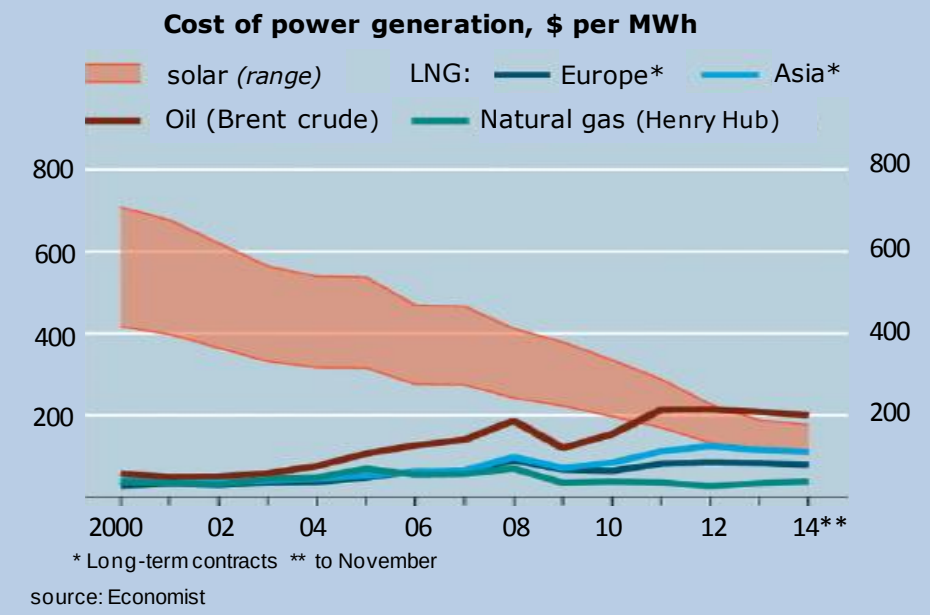
of CO_2 will rise considerably and make it so much harder to slow the secular increase of the world's average temperature. Another effect is political: the process to wean the rich countries of their reliance on fossil fuel supplies from volatile regions such as the Near East and Russia would go into reverse. In recent years, energy supplies had successfully been diversified in terms of geography and technology – this process would slow, to say the least. On top of this, many investments into energy efficiency projects would in retrospect be financially less profitable than expected.



source: BP Statistical Review of World Energy June 2014

29. **One way to avoid write-downs would be to hold up the price of energy paid by consumers and business when the input costs of fossil fuels fall.** Investing in alternative energy had made sense not only because it was good for the environment but also because fossil fuels had been so expensive. A tax on the consumption of oil or other fossil fuels that rises when their world market prices go down would do the trick, just as significantly raising the cost of CO_2 emission rights. For the economies of energy importing countries other welcome side effects of such a policy would be a further improvement in the terms of trade and less dependence on foreign oil producers. To my knowledge, no government has yet implemented such a strategy – vested interests remain too strong. Think coal and gas burning utilities, auto companies and labor unions in energy-intensive sectors which are concerned about the loss of jobs.

30. **While the price reduction of fossil fuels will slow the energy transition – the "Energiewende" – it cannot prevent it.** One reason is that even poor countries will become more concerned about the quality of their environment as they get richer, witness the efforts of the Chinese government to reduce air and water pollution by aggressively promoting alternative technologies. Another reason is cost: the cost of producing and storing electricity from wind and sun continues to fall rapidly, a result of technical progress and economies of scale. It is only a matter of time before renewables are fully competitive vis-à-vis fossil fuels.



31. **The cleantech, or green industry is still an infant industry that needs government support in the form of subsidies and regulations aimed at reducing the emission of greenhouse gases and other destructive effects of modern economies. It is also a growth industry - environmental issues become relatively more important as the world gets richer. It is no longer just a cottage industry with lots of newcomers, mergers and bankruptcies. Established energy companies are beginning to take notice of the profit opportunities as well**.

Investment ideas

32. The main conclusion for financial investors is that they should **shun shares of firms whose valuation does not take into account the fact that their fossil fuel reserves and production facilities are worth much less than what they are showing in their annual reports.**

33. Producers of **cars and airplanes** will benefit for a while from lower oil prices, as do airlines, logistics firms and chemical companies, to name just a few.

34. Near-term, the **cleantech sector is under pressure** – high fossil fuel prices cannot be relied upon for growth any longer.

35. **Longer-term, the process of substituting oil, coal and gas by alternative sources of energy looks unstoppable as these continue to get much cheaper**. Those established utilities and producers of fossil fuels will survive and even do well which are able to cut their costs and change their production processes in the direction of cleantech. Their broad customer bases and deep pockets give them a competitive advantage in this young industry – only they have the means to build large offshore wind parks and other big-ticket facilities.

36. Growth companies are typically small and not yet listed, and many are struggling for survival in this era of low fossil fuel prices. **Only private equity funds willing to spend the time and money are able to identify future winners.**

37. More generally, cheap oil provides a strong boost to economic growth in importing countries and thus reduces the risk of deflation there. **We are approaching the point where government bond yields will begin to rise again. The trigger to look for is wages** – if they finally respond to favorable labor market conditions, inflation will be back on the agenda. Especially the US, the British and the German bond markets would suffer in such a scenario.